Commonwealth of Kentucky
Division for Air Quality

FINAL PERMIT STATEMENT OF BASIS

FINAL CONDITIONAL MAJOR PERMIT NO. F-06-022 REVISION 2
SUPERIOR BATTERY MANUFACTURING
RUSSELL SPRINGS, KY.
NOVEMBER 30, 2007
RITA ARGUELLO, REVIEWER
PLANT I.D. # 21-207-00019
APPLICATION ACTIVITY # APE20070002
AI# 3893

REVISION 2: Superior Battery Manufacturing submitted an application for replacing equipments in Casting, Form, Finish, and Pasting operations. Those equipments will increase the operation efficiency. They are incorporated in:

Section B: Equipments replacing and the addition of a stack.

Section C: Replacing and removing equipments from the Form and Finish Department.

After this change, the PTE of pollutants is still below the threshold defined in 401 KAR 52:030, hence, the source remains as Conditional Major.

REVISION 1: The Cover page of the Permit had an erroneous expiration date and this was corrected in this revision.

ORIGINAL ISSUANCE:

PUBLIC AND U.S. EPA REVIEW:
Public notice was placed in the Russell Springs Times Journal on August 31, 2006. The comment period ended on September 30, 2006. There were no comments from the public. There were no comments from U.S. EPA. Comments from Superior Battery and the Division responses are in Attachment A.

GENERAL SOURCE DESCRIPTION:
Superior Battery Manufacturing produces lead acid storage batteries. Lead acid storage batteries are produced from lead alloy ingots and lead oxide; the lead oxide is manufactured at the plant. Battery grids are manufactured by the casting operations. In the casting operations, lead alloy ingots are charged to a melting pot, from which the molten lead is pumped to casting machines and dispensed by a ladle into molds. Grids are also cast in continuous strips on a continuous caster and coiled. The grids are cured. The pastes used to fill the battery grids are made in batch-type processes. A mixture of lead oxide powder, water and sulfuric acid produces a positive paste, and the same ingredients in slightly different proportions with the addition of an expander (primarily carbon black and Barium Sulfate) make the negative paste. Pasting machines then force this paste into the interstices of the grids, which are made into plates. To provide optimum conditions the plates are placed into humidity curing chambers. Casting and Pasting could produce sufficient plates to make 5,400,000 twenty-pound lead batteries per year. After the plates are cured they are sent to the 3-process operation of plate stacking, plate burning (Cast-on-Strap), and then these cell elements are placed into the battery case. The individual cells consist of alternating positive and negative plates with insulators between them. Element assembly consists of placing the cell elements into the battery case. The cells are then connected together and the cover and battery terminals are installed.

During wet formation, the assembled batteries are filled with a dilute sulfuric acid solution. The positive plates are connected to the positive pole and the negative plates are connected to the negative pole. After forming the batteries, the diluted acid is dumped and recycled and new stronger acid is added and a boost charge is then applied to complete the battery.

The Formation operation is installed in another building but is considered to be part of the battery manufacturing and considered as one source. This operation has a production rate of 400 batteries per hour at 8,400 hour/year totaling 3,360,000 batteries/year. These actual batteries include a broad range of individual battery and lead weights, and are not counted as 20 pound equivalent batteries

The assembly or 3-process operation is the bottleneck, limiting the production of batteries to 1,525,000 twenty-pound equivalent batteries per year. Superior Battery Manufacturing is proposing a voluntary limit capacity to 30,502,000 lbs per year of lead in the assembly 3-process operation. The plant purchased 19,780,596 lbs total lead in 2004, not including Pb6 (a specific lead alloy for grid casting) and lead strip (used to make lead washers).

All the information is taken from the application that was submitted May 21, 2005.

A thorough analysis has been made of all relevant information available that pertains to this source. The Division has concluded that compliance with the terms of the permit will ensure compliance with all air quality requirements and determination that a draft Conditional Major permit should be issued, instead of a registered source designation as requested by Superior Battery Manufacturing.

INDIVIDUAL UNIT, OPERATION OR ACTIVITY EMISSION AND OPERATING CAPS:

KYEIS No.	Emission Unit	Contaminant	Regulation	Limitation	Monitoring
PbO1 PbO2	Oxide Mill 1 and 2 OM2, OM1	Lead, Particulate matter	401 KAR 63:020 Potentially hazardous matter or toxic substances. 401 KAR 60:005 standards of performance for new stationary sources. 60.372 Subpart KK 401 KAR 59:010 New process operations.	5.0 mg Pb/dscm	Baghouse pressure drop HEPA pressure drop Visible emissions
C1	Casting	Lead, Particulate matter	401 KAR 63:020 401 KAR 59:010 401 KAR 60:005 60.372 Subpart KK	.40 mg Pb/dscm opacity 0%	Baghouse pressure drop Visible emissions Observed once per day
P1	Pasting	Lead, Particulate matter	401 KAR 63:020 401 KAR 59:010 401 KAR 60:005 60.372 Subpart KK	1.0 mg Pb/dscm Opacity is 0%	Baghouse pressure drop HEPA pressure drop Visible emissions Observe once per day
3-PAB, 3-PC	3-Process lines A, B and C 3PA, 3PC	Lead, Particulate matter	60.372 Subpart KK 401 KAR 63:020 401 KAR 59:010 401 KAR 60:005 NSPS	1.0 mg Pb/dscm Opacity is 0%	Baghouse pressure drop HEPA pressure drop Visible emissions Observe once per day
HSA HSB HSC	Heat Seal Lines A, B and C	Particulate Visible	401 KAR 59:010		Visible emission observations

	HSA, HSB, HSC				
SP1	Small Parts Cast	Lead Particulate matter	60.372 Subpart KK 401 KAR 59:010	1.0 mg Pb/dscm Opacity is 0%	Pressure gauge Observe emissions Opacity
SP2	Battery Cable Manufacturing	VOC			Keep track of total quantity of paint primer used, assume 100% VOC content
Frm1	Battery Formation Mist Eliminator 1, 2 and 3. FS1, FS2, FS3	Sulfuric Acid	401 KAR 59:010	Pressure drop. Once per day. Maximum opacity 20%	Pressure drop across. mist eliminators pH of mist eliminator wash water. Visual observation of stack

EMISSION AND OPERATING CAPS DESCRIPTION:
The Lead processed shall not exceed 30,502,000 lbs. per year.

1. Total particulate emissions from the entire source shall not exceed 90 tons/year.
2. Individual HAP emissions from this source shall be less than 9.0 tons/year based on a 12-month rolling total.
3. Plant-wide total HAP emissions from this source shall be less than 22.5 tons/year based on a 12-month rolling total.

Regulation applicable:
401 KAR 52:030 Federally enforceable permits for nonmajor sources.
401 KAR 59:010 New process operations.
40 CFR 60:370 subpart KK.

Emission Factors:
The emissions factors used in this permit are from AP 42 Vol. II source for lead and particulate matter. Emission factors for sulfuric acid mist were provided by Superior Battery.

Control and Efficiency:
Lead emissions are controlled by fabric filter baghouses with efficiencies ranging from 60 to 99.97%. Scrubbers control sulfuric acid mist with efficiency of 95%. Emissions from natural gas combustion are control with baghouses with efficiency of 50%.

Test:
All stacks to be tested during this permit period subject to 40 CFR 60:370 subpart KK.

Monitoring:
Superior Battery shall maintain monthly record of lead processed.

CREDIBLE EVIDENCE:
This permit contains provisions, which require that specific test methods, monitoring or recordkeeping be used as a demonstration of compliance with permit limits. On February 24, 1997, the U.S. EPA promulgated revisions to the following federal regulations: 40 CFR Part 51, Sec. 51.212; 40 CFR Part 52, Sec. 52.12; 40 CFR Part 52, Sec. 52.30; 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12, that allow the use of credible evidence to establish compliance with applicable requirements. At the issuance of this permit, Kentucky has only

adopted the provisions of 40 CFR Part 60, Sec. 60.11 and 40 CFR Part 61, Sec. 61.12 into its air quality regulations.

Attachment A
Comments from Superior Battery and the Division responses

Comment #1	'Final Permit State of Basis, General Source Description – Superior Battery does not utilize the dry charge formation process. All batteries are formed using the Wet Formation Process.'
Division response:	The Statement of Basis had a typo copying from AP-42 description the word "dry". It is corrected to be wet on the Statement of Basis Source Description. The fact that Superior Battery has a wet-formation process was taken into consideration in the original permit regulations and calculations. The Statement of Basis-Source Description has been updated with ESCA Tech, Inc. input.
Comment #2:	Final Permit - Permit issue date is 10/04/2006. Expiration date listed is 10/04/2006.
Division response:	Typo has been corrected. The expiration date now reads 10/04/2011.
Comment #3	Section B- Affected Facilities: humidity curing is not part of the pasting facility according to NSPS 40 CFR 60:372 Subpart KK.
Division response:	The humidity curing is part of the pasting. The chemical reactions take place with temperature changes and there is the need to lower the temperature to continue with the battery production process. Cooling and drying are steps in the paste mixing operation. Therefore the regulation 40 CFR 60:372 (a)(6) subpart KK, emission standard does apply.